

VOLUME CONTENTS

Volume 23 Number 1

S. W. S. McKeever	1 Editorial
SPACE RADIATION	
S. B. Curtis	5 Single track effects, biostack and risk assessment
V. E. Dudkin	9 Secondary radiations in spacecraft shieldings
M. J. Golightly, K. Hardy and W. Quam	25 Radiation dosimetry measurements during U.S. Space Shuttle missions with the RME-III
J. W. Kern	43 A note on vector flux models for radiation dose calculations
V. M. Sakharov	49 A spacecraft shielding model for calculating exposures to radiation
V. M. Sakharov	53 A method for estimating the bremsstrahlung dose into spacecraft from incident electrons
J. L. Shinn, J. W. Wilson, F. F. Badavi, E. V. Benton, I. Csige, A. L. Frank and E. R. Benton	57 HZE beam transport in multilayered materials
C. J. Zeitlin, K. A. Frankel, W. Gong, L. Heilbronn, E. J. Lampo, R. Leres, J. Miller and W. Schimmerling	65 A modular solid state detector for measuring high energy heavy ion fragmentation near the beam axis
REGULAR PAPERS	
J. Prokein and G. A. Wagner	85 Analysis of thermoluminescent glow peaks in quartz derived from the KTB-drill hole
G. A. Wagner, E. Hejl and P. Van den haute	95 The KTB fission-track project: methodical aspects and geological implications
G. M. Laslett, R. F. Galbraith and P. F. Green	103 The analysis of projected fission track lengths
S. C. Yoon and C. W. Ha	125 Comparison study on theoretical and experimental track density using an electrostatic spectrometer
V. Pagonis and C. Michael	131 Annealing effects on the thermoluminescence of synthetic calcite powder
D. Miallier, S. Sanzelle, C. Falguères, J. Faïn, M. Montret, Th. Pilleyre, S. Soumana, M. Laurent, G. Camus and A. De Goer de Hervé	143 Intercomparisons of red TL and ESR signals from heated quartz grains
R. Mazzei	155 Submicroscopic nuclear track theory and the charge changing process
W. J. Rink, E. J. Rhodes and R. Grün	159 Thermoluminescence from igneous and natural hydrothermal vein quartz: dose response after optical bleaching
R. Grün	175 The kinetics of TL peaks and its effect on the dose versus temperature plot
S. G. Raymond, B. J. Luff, P. D. Townsend, Xiqi Feng and Guanqing Hu	195 Thermoluminescence spectra of doped $\text{Bi}_4\text{Ge}_3\text{O}_{12}$
I. M. Yamazaki and E. Y. Outi	203 Makrofol KG microfilters with large pores applied for the separation of two different liquid phases (emulsion)
D. Schlößer, K. Kroneberger, M. Schosnig, F. M. Russell and K. O. Groeneveld	209 Search for solitons in solids

V. Bamblevski and F. Spurný	215 Nuclear track detector with radiators and their use in high energy particle fields
D. Nikezić and D. Veličković	219 Calibration coefficient for radon measurements with LR-115-II track detector in different types of diffusion chambers
M. I. Gaso, M. L. Cervantes, N. Segovia and V. H. Espindola	225 Atmospheric radon concentration levels
<i>Short Communications</i>	
B. Bhattacharjee, H. L. Das and T. D. Goswami	231 DC conductivity of cellulose nitrate particle track detector
M. Faghih-Habibi and H. Afarideh	235 Response of the CN-85 SSNT detector to low-energy protons and deuterons
V. P. Pautov, G. N. Marchenko and V. F. Sopin	239 The quality improvement of cellulose nitrate lacquer for film detectors
D. Azimi-Garakani, K. Langen and C. Wernli	241 Further study of the characteristics of different proton-recoil track detectors at various neutron energies
F. Spurný and I. Votočková	247 Response of some thermoluminescent detectors to alpha particles
F. Spurný, I. Votočková and V. P. Bamblevski	251 On the energy dependence of bubble damage neutron detectors
<i>Conference Reports</i>	
M. Sohrabi	255 Sixteenth International Conference on Nuclear Tracks in Solids held at Beijing, China, 7–11 September 1992
M. Sohrabi	261 Proceedings of the International Conference on High Levels of Natural Radiation held at Ramsar, Islamic Republic of Iran, 3–7 November 1990

Volume 23 Numbers 2/3

7th International Specialist Seminar on Thermoluminescence and Electron Spin Resonance Dating, Krems, Austria, 5–9 July 1993

N. Vana and S. W. S. McKeever	263 Editorial
SECTION 1: MODELS	
S. W. S. McKeever	267 Models for optical bleaching of thermoluminescence in sediments
R. Chen, G. Fogel and N. Kristianpoller	277 Theoretical account of the sensitization and de-sensitization in quartz
G. A. T. Duller	281 A new method for the analysis of infrared stimulated luminescence data from potassium feldspars
J. Faïn, S. Sanzelle, D. Miallier, M. Montret and Th. Pilleyre	287 A TL model based on deep traps competition
T. Hashimoto, S. Sakaue, H. Aoki and M. Ichino	293 Dependence of TL-property changes of natural quartzes on aluminium contents accompanied by thermal annealing treatment
S. W. S. McKeever and M. F. Morris	301 Computer simulations of optical bleaching of TL and OSL signals
R. Grün and S. Brumby	307 The assessment of errors in past radiation doses extrapolated from ESR/TL dose-response data
R. Grün and S. C. Packman	317 Observations on the kinetics involved in the TL glow curves in quartz, K-feldspar and Na-feldspar mineral separates of sediments and their significance for dating studies
M. F. Morris and S. W. S. McKeever	323 Optical bleaching studies of quartz
B. W. Smith and E. J. Rhodes	329 Charge movements in quartz and their relevance to optical dating
M. A. Short and Man-Yin W. Tso	335 New methods for determining the thermal activation energies of light sensitive traps

SECTION 2: THERMOLUMINESCENCE STUDIES

P. D. Townsend	341 Analysis of TL emission spectra
A. J. J. Bos, T. M. Piters and P. J. Ypma	349 Thermoluminescence emission spectra and optical bleaching of oligoclase
C. J. McFee and M. S. Tite	355 Investigations into the thermoluminescence properties of single quartz grains using an imaging photon detector
M. Castiglioni, M. Martini, G. Spinolo and A. Vedda	361 Thermally stimulated luminescence (TSL) and conductivity (TSC) of synthetic crystalline quartz
J. R. Prescott, P. J. Fox, G. B. Robertson and J. T. Hutton	367 Three-dimensional spectral studies of the bleaching of the thermoluminescence of feldspars
R. Visocekas, N. A. Spooner, A. Zink and P. Blanc	377 Tunnel afterglow, fading and infrared emission in thermoluminescence of feldspars
H. Wiggenhorn	387 IRSL dating of K-feldspar at elevated temperatures and infrared bleaching of TL
P. Guibert, C. Ney, F. Bechtel, M. Schvoerer and F. Geus	393 TL and radiocarbon dating of neolithic sepultures from Sudan: intercomparison of results
D. Miällier, J. Faïn, S. Sanzelle, Th. Pilleyre, M. Montret, S. Soumana and C. Falguères	399 Attempts at dating pumice deposits around 580 ka by use of red TL and ESR of xenolithic quartz inclusions
A. Nakanishi	405 Thermoluminescence study of the terrestrial ages of Antarctic meteorites
R. B. Scholefield, J. R. Prescott, A. D. Franklin and P. J. Fox	409 Observations on some thermoluminescence emission centres in geological quartz
D. M. Price	413 TL signatures of quartz grains of different origin
W. J. Rink	419 Billion-year age dependence of luminescence in granitic quartz
Q. Zhang, B. Yang, R. A. Wood, D. R. R. White, P. D. Townsend and B. J. Luff	423 Thermoluminescence spectra of amethyst
P. D. Townsend, B. J. Luff and R. A. Wood	433 Mn ²⁺ transitions in the TL emission spectra of calcite
H. M. Rendell, P. D. Townsend, R. A. Wood and B. J. Luff	441 Thermal treatments and emission spectra of TL from quartz
Man-Yin W. Tso and Sheng-Hua Li	451 Equivalent dose estimation for pottery by single disc regeneration method
L. A. Carmichael, D. C. W. Sanderson and S. Ni Riain	455 Thermoluminescence measurement of calcite shells
J. Q. Spencer and D. C. W. Sanderson	465 Mapping thermal exposure by luminescence thermometry

SECTION 3: DOSIMETRY

I. K. Bailiff	471 The pre-dose technique
W. J. Rink and H. P. Schwarcz	481 Dose response of ESR signals in tooth enamel
M. R. Krötschek, U. Rieser, L. Zöller and J. Heinicke	485 Radioactive disequilibria in palaeodosimetric dating of sediments
E. H. Haskell	491 Some recent developments in accident dosimetry using TL of environmental materials
M. H. Kharita, R. Stokes and S. A. Durrani	493 Phototransferred thermoluminescence (PTTL) in LiF (Mg, Cu, P) (GR-200)
J. R. Prescott and J. T. Hutton	497 Cosmic ray contributions to dose rates for luminescence and ESR dating: large depths and long-term time variations
S. Soumana, J. Faïn, D. Miällier, M. Montret, Th. Pilleyre, S. Sanzelle and M. Akselrod	501 Gamma and enclosure dosimetry for TL/ESR dating with the new Al ₂ O ₃ :C TL dosimeter
N. Mercier, H. Valladas, G. Valladas, J.-L. Reyss and J.-L. Joron	507 A new dosimetric calibration tool

A. Wieser, H. Y. Göksu, D. F. Regulla and A. Vogenauer	509 Limits of retrospective accident dosimetry by EPR and TL with natural materials
SECTION 4: SYSTEMS	
P. D. Townsend and B. J. Luff	517 High sensitivity TL spectral measurements
L. Bøtter-Jensen, N. R. J. Poolton, F. Willumsen and H. Christiansen	519 A compact design for monochromatic OSL measurements in the wavelength range 380–1020 nm
U. Rieser, M. R. Kröbtschek and W. Stolz	523 CCD-camera-based high sensitivity TL/OSL-spectrometer
N. R. J. Poolton, L. Bøtter-Jensen, A. G. Wintle, J. Jakobsen, F. Jørgensen and K. L. Knudsen	529 A portable system for the measurement of sediment OSL in the field
J. Pierson, S. L. Forman, K. Lepper and G. Conley	533 A variable narrow bandpass optically stimulated luminescence system for Quaternary geochronology
D. Burggraaf and E. H. Haskell	537 A software package for TL/OSL spectrometry and extraction of glow curves from individual grains
SECTION 5: OPTICALLY STIMULATED LUMINESCENCE STUDIES	
I. K. Bailiff and S. M. Barnett	541 Characteristics of infrared-stimulated luminescence from a feldspar at low temperatures
R. B. Galloway	547 On the stimulation of luminescence with green light emitting diodes
N. R. J. Poolton, L. Bøtter-Jensen, P. J. M. Ypma and O. Johnsen	551 Influence of crystal structure on the optically stimulated luminescence properties of feldspars
M. Lamothe, S. Balescu and M. Auclair	555 Natural IRSL intensities and apparent luminescence ages of single feldspar grains extracted from partially bleached sediments
Sheng-Hua Li	563 Optical dating: insufficiently bleached sediments
J. Rees-Jones and M. S. Tite	569 Recuperation of IRSL after bleaching and consequences for dating young sediment
H. M. Rendell and R. A. Wood	575 Quartz sample pretreatments for TL/OSL dating: studies of TL emission spectra
E. J. Rhodes and L. Pownall	581 Zeroing of the OSL signal in quartz from young glaciofluvial sediments
C. A. Richardson	587 Effects of bleaching on the sensitivity to dose of the infrared-stimulated luminescence of potassium-rich feldspars from Ynyslas, Wales
N. A. Spooner	593 On the optical dating signal from quartz
S. Stokes	601 The timing of OSL sensitivity changes in a natural quartz
A. G. Wintle	607 Infrared-stimulated luminescence dating of sediments
L. Bøtter-Jensen, G. A. T. Duller and N. R. J. Poolton	613 Excitation and emission spectrometry of stimulated luminescence from quartz and feldspars
R. B. Galloway	617 Comparison of the green- and infrared-stimulated luminescence of feldspar
H. Jungner and L. Bøtter-Jensen	621 Study of sensitivity change of OSL signals from quartz and feldspars as a function of preheat temperature
N. A. Spooner	625 The anomalous fading of infrared-stimulated luminescence from feldspars
D. C. W. Sanderson and R. J. Clark	633 Pulsed photostimulated luminescence of alkali feldspars
R. J. Clark and D. C. W. Sanderson	641 Photostimulated luminescence excitation spectroscopy of feldspars and micas
R. G. Roberts, N. A. Spooner and D. G. Questiaux	647 Palaeodose underestimates caused by extended-duration preheats in the optical dating of quartz

Volume 23 Number 4

- C. M. Sunta, E. M. Yoshimura and E. Okuno** 655 Supralinearity and sensitization factors in thermoluminescence
- R. Chen and S. W. S. McKeever** 667 Characterization of nonlinearities in the dose dependence of thermoluminescence
- C. Ditlefsen and D. J. Huntley** 675 Optical excitation of trapped charges in quartz, potassium feldspars and mixed silicates: the dependence on photon energy
- Chi-Yu King and A. Minissale** 683 Seasonal variability of soil-gas radon concentration in central California
- A. Delgado, J. L. Muñiz and J. M. Gómez Ros** 693 On the peculiarities of peak 4 in LiF TLD-100
- P. D. Allen and M. A. Chaudhri** 703 Photoparticle production in solid state detectors used for neutron dosimetry in the presence of photons
- M. I. Chipară, V. Grecu, D. Catană, J. Reyes Romero, S. Coca and M. D. Chipară** 709 ESR investigations of electron-beam irradiated cellulose nitrate
- P. J. Jojo, A. J. Khan, R. K. Tyagi, T. V. Ramachandran, M. C. Subba Ramu and R. Prasad** 715 Interlaboratory calibration of track-etch detectors for the measurement of radon and radon daughter levels
- Y. Komaki, N. Ishikawa, T. Sakurai and Y. Matsumoto** 725 Elution of residual ions with etching of heavy ion-injected polyimide
- L. G. Loría and P. Mora** 731 Specific activity and derived intervention levels for cesium-137 in Costa Rican export goods: tuna fish, coffee and powdered milk
- G. S. Islam and A. K. F. Haque** 737 Measurement of mixed radon and thoron daughter concentrations using alpha and beta activities filtered from air
- J. D. Pinheiro Filho, E. S. De Almeida, E. Z. Bilbao, R. C. Santos, A. X. Da Silva, V. Sciani and P. R. Rela** 743 Thermal annealing of proton tracks with energies of 4 and 6 MeV in CR-39 polymer detectors
- Short Communications*
- J. Räisänen, E. Rauhala, Zs. Fülöp, Á. Z. Kiss, E. Somorjai and I. Hunyadi** 749 Stopping powers of CR-39 nuclear track material for $Z = 1-14$ ions with 0.25–2.8 MeV/u
- S. G. Vajapurkar, R. T. Paturkar, R. Raman, P. K. Bhatnagar, A. Pandya and S. C. Roy** 753 A neutron sensor based on superheated droplets

I *Volume Contents and Author Index for Volume 23, 1994*

